NAVSEA
STANDARD ITEM

FY-01

ITEM NO: 009-56
DATE: 23 SEP 1999
CATEGORY: II

1. SCOPE:

1.1 Title: Boiler Wet Lay-Up; accomplish

2. REFERENCES:

a. S9086-GY-STM-010/CH-221, Boilers

3. REQUIREMENTS:

3.1 Lay-up boilers using the hydrazine/morpholine method in accordance with Paragraphs 221-2.3.5.4 and 221-B.5 of 2.a.

3.1.1 Accomplish the safety and handling of hydrazine in accordance with Paragraph 221-B.4 of 2.a.

3.2 Notify the SUPERVISOR 24 hours prior to lay-up of each boiler.

3.3 Determine and provide the volume of water required to fill the boiler, superheater, economizer, and associated piping by consulting Table One of this item. Include an additional 500 gallons for reserve in the total amount required in Table One. Water used for lay-up shall conform to the following requirements:

CONSTITUENT or PROPERTY	REQUIREMENT
SHORE STEAM AND CONDENSED SHORE STEAM USED AS FEEDWATER	
pH	8.0 to 9.5
Conductivity	25 microhm/cm (25 microsiemens/cm) max
Dissolved Silica	0.2 ppm (0.2 mg/L) max
Hardness	0.10 epm (0.10 meg/L) max
SHORE PROCESSED FEEDWATER (DEMINERALIZERS, REVERSE OSMOSIS)	
pH	6.0 to 8.0 (process effluent) 5.8 to 8.0 (after storage, e.g., in tank truck)
Conductivity	2.5 microhm/cm (2.5 microsiemens/cm) max (at point of delivery)
Silica	0.2 ppm (0.2 mg/L) max

3.3.1 Submit four legible copies of chemical analysis to the SUPERVISOR.

3.3.2 The use of filming amines to control steam/steam condensate pH is prohibited.

3.3.3 Provide a pierside tank that will hold the quantity of feedwater required. The tank shall be used to mix the hydrazine/morpholine solution.

3.3.4 For each 1000 gallons of water added to the tank, 2500 milliliters (2/3 gallon) of catalyzed 15-percent hydrazine and 375 milliliters (4/5 pint) of 40-percent morpholine shall be used.

3.3.4.1 Transfer the required amount of hydrazine into narrow mouthed one-gallon or two-gallon polyethylene bottles with polyethylene or polypropylene screw closures.

3.3.4.2 Transfer the required amount of morpholine to a narrow mouthed pint, quart, or gallon polyethylene bottle as appropriate to the volume needed. Pour the morpholine and hydrazine into the tank.

3.3.4.3 Immediately fill the tank with feedwater to the level calculated in 3.3 for the quantity of hydrazine solution desired.

3.3.5 Remove water from the boiler, superheater, and economizer. Close boiler drains and openings with the exception of steam drum, superheater, and economizer vents.

3.3.6 Immediately fill the boiler, including superheater and economizer, taking suction from the hydrazine/morpholine-treated tank.

3.3.6.1 While filling the boiler, close each vent in turn as the treated water overflows. After the boiler is filled as shown by an overflow from the highest vent, crack each lower vent in turn to ensure that there are no trapped air pockets.

3.4 Maintain a minimum of 15 PSIG, not to exceed 150 PSIG, hydrostatic pressure on the boiler, using a head tank, nitrogen, or shore steam in accordance with Appendix B and Paragraph 221-2.3 of 2.a.

3.5 Determine the hydrazine concentration and pH on the day the boiler is placed under lay-up and weekly thereafter. PH test shall be accomplished using a pH meter.

3.5.1 Draw a sample through the boiler water sample line after allowing the boiler water to flow for five minutes to flush the line. Allow the sample bottle to overflow before capping the bottle to eliminate trapped air.

3.5.1.1 Determine the hydrazine concentration and pH as soon as possible, but within one hour after sampling.

3.5.1.2 The hydrazine concentration will normally be between 30 and 70 ppm. If the hydrazine content falls below 10 ppm, notify the SUPERVISOR. The pH value will normally be between 8.5 and 9.5. Do not retreat if the pH falls outside this range.

3.5.2 Submit four legible copies of a report to the SUPERVISOR of the hydrazine concentration and pH on the day the lay-up commences and weekly thereafter.

3.6 Drain the superheater and bring the boilers to operating level. Dispose of removed solution in accordance with local, state, and Federal regulations.

3.6.1 Do not drain the solution to the bilge.

4. NOTES:

4.1 None.

TABLE ONE

COLD FILL INCLUDING
ECONOMIZER AND SUPERHEATER

HULL NUMBER	CAPACITY (GALLONS)
AD-15, AD-18, AD-19	1017
AD-37, AD-38	3062
AD-41 through AD-44	2941
AE-21 through AE-25	3375
AE-26 through AE-29, AE-32 through AE-35	2760
AFS-1 through AFS-7	2845
AGDS-2	2915
AGF-3, AGF-11	2280
AO-177 through AO-181	5662
AOE-1 through AOE-3	2887
AOE-4	4040
AOR-1 through AOR-7	3285
AR-5 through AR-8	1017
AS-33, AS-34	3062
AS-36, AS-37	2760
AS-39 through AS-41	2941
AVM-1	1017
AVT-16	2959
BB-61	2443
CG-16 through CG-18	2078
CG-19 through CG-24	2648
CG-26 through CG-28, CG-32, CG-34	2330
CG-29 through CG-31, CG-33	2361
CV-59	3937
CV-60	4001
CV-61	4022
CV-62	4094
CV-63, CV-64	3997
CV-66	4680
CV-67	4733
CVA-41, CVA-43	3157
DD-763, DD-784, DD-785, DD-862, DD-864, DD-866, DD-886	2307
DD-931, DD-933	2506
DD-937, DD-938, DD-943, DD-944, DD-948	2143
DD-940 through DD-942, DD-945, DD-946, DD-950, DD-951	2416
DDG-2, DDG-3, DDG-7, DDG-8, DDG-10 through DDG-13	2077
DDG-4 through DDG-6, DDG-9, DDG-14	1993

TABLE ONE
(CON'T)

COLD FILL INCLUDING
ECONOMIZER AND SUPERHEATER

HULL NUMBER	CAPACITY (GALLONS)
DDG-15 through DDG-19	2353
DDG-20 through DDG-22	2077
DDG-23, DDG-24	2007
DDG-31, DDG-33	2143
DDG-32	2506
DDG-34	2416
DDG-37 through DDG-39	2640
DDG-40 through DDG-46	2077
FF-1037, FF-1038	2263
FF-1040, FF-1041, FF-1043 through FF-1045	1702
FF-1047 through FF-1051, FF-1098	1702
FF-1052 through FF-1055, FF-1058, FF-1060, FF-1062, FF-1064	1385
FF-1066, FF-1067, FF-1070, FF-1071, FF-1074, FF-1076	1385
FF-1056, FF-1057, FF-1059, FF-1061, FF-1063, FF-1065	1096
FF-1068, FF-1069, FF-1072, FF-1073, FF-1075, FF-1077	1096
FF-1078 through FF-1097	1416
FFG-1 through FFG-6	1702
LCC-19, LCC-20	2573
LHA-1 through LHA-5, LHD-1	5146
LKA-113 through LKA-117	6243
LPD-1, LPD-2, LPD-4 through LPD-10, LPD-12 through LPD-15	2280
LPH-2, LPH-3, LPH-7, LPH-10, LPH-11	2810
LPH-9	3138
LPH-12	3235
LSD-28 through LSD-35	2280
LSD-36	1992
LSD-37 through LSD-40	2460
LST-1179 through LST-1198	471